factors for PVCs-induced cardiomyopathy. Based on the result of long term successful RFCA, we divide cardiomyopathy patients into two groups: Group Success (n=4) and Group Failure (n=4). Two groups show no significant difference in the PVCs burden and the LVEF before RFCA. The PVCs burden decreases significantly from 24.86%± 12.00 to 0.00±0.00 in Group Success (p <0.05) when the PVCs burden decreases insignificantly from 26.67%±11.51 to 19.38%±0.00 in Group Failure (p>0.05). The LVEF increases significantly from 40.50%±7.01 to 57.00%±10.15 in Group Success (p>0.05) when the LVEF stay similar from 40.25%±5.12 to 42.00%±11.52 in Group Failure (p <0.05). The PVCs burden can be reduced by the successful RFCA and therefore improve the heart function (p > 0.05.)

CONCLUSIONS PVCs burden>20% and PVCs history over 15 years are both independent risk factors for the frequent PVCs induced-cardiomyopathy. RFCA is an effective treatment to decrease the number of PVCs and improve the LVEF value.

NON-INVASIVE CARDIAC ELECTRICAL INSPECTION

GW26-e4753

Prediction of cardiac mortality after acute myocardial infarction using support vector machine based on heart-rate dynamics

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OBJECTIVES To investigate the warning power of support vector machine (SVM) model based on heart-rate dynamics for prediction of cardiac death after acute myocardial infarction (AMI).

METHODS A total of 226 AMI patients were admitted to First Affiliated Hospital of Harbin Medical University from January 2009 to December 2009. Multivariate heart-rate dynamics parameters such as heart-rate variability (HRV), deceleration capacity of heart rate (DC) and acceleration capacity of heart rate (AC) extracting from Holter monitoring within two weeks after AMI were analyzed. The SVM model based on electrical parameters is established and machine learning and classification were analyzed based on the results of following-up. The classification results compare with left ventricular ejection fraction (LVEF), R-R interval standard deviation (SDNN) and DC. By using the area under the receiver operating curve (AUC) to evaluate the various tools and warning capability, and multivariable logistic regression analysis and Kaplan-Meier survival analysis were used too.

RESULTS During a mean follow-up of 28 months, cardiac death was 12, and finally a total of 208 patients were included in the analysis, including 150 males, 58 females. We evaluated SVM algorithm for integrating various electrocardiographic features based on 8 dimension heart-rate dynamics indices. Mean AUC of SVM model was 0.858, compared with 0.742 (P<0.01) for LVEF, 0.793 (P<0.05) for SDNN and 0.740 (P<0.01) for DC, respectively. Multivariable logistic regression analysis revealed that the relative hazard risk (HR) of SVM model was 30.291 (95%CI, 3.664~250.424) after correcting the variety of clinical and electrical variables. Kaplan-Meier analysis revealed that the model of SVM for negative survival rate is higher than the positive (P<0.01).

CONCLUSIONS SVM prediction model based on heart-rate dynamics is valid and effective for prediction of cardiac death after AMI and leads to higher prediction accuracy than traditional tools.

GW26-e2164

Heart Rate Changes in Patients with Acquired Long QT Syndrome

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OBJECTIVES Our recent studies revealed that acquired long QT syndrome (ALQTS) is much more common than previously thought. Understanding the pathophysiology of ALQTS is very important for risk stratifications. This study therefore investigated heart rate (HR) changes in patients with ALQTS.

METHODS A retrospective medical records review was conducted in hospitalized patients including 437 ALQTS and 639 age- and sex-match control subjects. The ALQTS group was consisted of 1) 293 patients with QTc≥ 500 ms caused by various reasons such as using QT-prolonging drugs, presence of electrolytes imbalance etc. 2) 144 long QT patients associated with left ventricular hypertrophy due to essential hypertension (HTN-LVH). HR at resting state was evaluated with medications such as beta-blockers that could alter HR taken into considerations. Echocardiographic measures such as left atrial diameter (LAD), left ventricular end-diastolic diameter (LVEDD) and ejection fraction (EF) were also assessed for patients in two groups.

RESULTS HR was faster in ALQTS subjects with markedly prolonged QTc compared to the control group (88±19 bpm vs. 75±15 bpm, p <0.0001). Left atrial and ventricular remodeling were more apparent in ALQTS subjects reflected by larger LAD (38±6 mm vs. 36±5 mm, p < 0.001), larger LVEDD (48±8 mm vs. 46±7 mm, p < 0.05) and a lower EF (0.53±0.1 vs. 0.55±0.09, p < 0.05), respectively. In the HTN-LVH group, more patients with ALQTS were prescribed with beta-blockers than those showing a normal QT (49% vs. 33%, p < 0.05). Nevertheless, HR was still faster in the ALQTS subjects (73±11 bpm vs. 66±10 bpm, p < 0.0001).

CONCLUSIONS Patients with ALQTS have a faster heart rate. Impaired cardiac function and structural remodeling may be the fundamental causes in patients with structural heart diseases. Determining the alterations in autonomic nerve system that modulates heart rate variability is awaited for further investigations.

GW26-e2440

Deceleration Capacity of Heart Rate in 34 Patients with Brainstem Tumor

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OBJECTIVES To explore the characteristics of deceleration capacity of heart rate (DC) in patients with brainstem tumor and its relationship with tumor site, pathology and postoperative recovery.

METHODS Thirty-four patients of brainstem tumor in Beijing Tiantan Hospital (research group, aged 15-45) and 40 health subjects (control group, aged 15-45) were enrolled in this study. The patients were divided into three couples of matching subgroups according to the tumor site, pathology and postoperative recovery: demarcated by the intermediate transverse section of mesencephalon, all patients were divided into subgroups S1 (low brainstem tumor, n=21) and subgroups S2 (high brainstem tumor, n=13); malignant tumor (subgroups P1, n=19) and benign tumor (subgroups P2, n=15); 25 patients with good recovery and transferred from intensive care unit (ICU) to neurosurgery ward within 5 days after operation composed subgroups R1, while those who left ICU over 5 days composed subgroups R2 (n=9), including poor-recovery patients, such as those of death and requiring a tracheotomy. The 24-hour electrocardiographic (ECG) Holter monitoring was performed in all subjects. DC indexes were compared between two groups and each matching subgroups. All the statistical analyses were performed through the SPSS 19.0. Besides, P<0.05 was considered as statistically significant.

RESULTS DC index was 7.12 ± 2.56 ms in the research group and 10.12 ± 3.21 ms in the control group, the difference was statistically significant, P <0.05. DC of subgroups S1 was different with that of subgroups S2 (5.26 ± 2.83 ms vs 8.83 ± 1.58 ms, P <0.05). Subgroups P1 was significantly lower than subgroups P2 (6.46 ±1.56ms vs 7.50 ±2.07 ms, P <0.05). Subgroups R1 had a higher DC than subgroups R1 (7.61 ± 31.58 ms vs 5.76± 1.45 ms, P <0.05).

CONCLUSIONS DC is lower in the patients with brainstem tumor. The factors including tumor site and pathology affect DC which is also possibly associated with the postoperative recovery. DC could be a new prognostic indicator for patients with brainstem tumor which is worthy of further clinical research.

GW26-e0742

Assessment of the left atrial appendage structure and function of the non-valvular atrial fibrillation by real-time three-dimensional transesophageal echocardiography

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OBJECTIVES Thromboembolic events are the major lethal cause of atrial fibrillation (AF). Accurately estimating the thromboembolic risk